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Abstract— **This paper proposes a new control strategy for three-phase shunt active power filter that is capable for three-wire or four-wire systems. It is based on Instantaneous Representative Active Power Equality. The principle of this control method is to equalize the dc component of instantaneous representative active power of the source and load that include zero-sequence power and losses compensation. This control method is capable to operate under nonideal main voltages and can force source currents nearly sinusoidal with unity power factor. Application in four-wire systems will reduce neutral current at source side. Simulations are done to verify analysis.**

Keywords- active power filter (APF), instantaneous real power, instantaneous reactive power, representative active power